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**FACSIMILE TRANSMISSION TO THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Date: June 1, 2004

From: William E. Player (attorney of record)

To: Examiner Otilia GABOR

Fax No. 571-273-2425

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In re the Application of	Kaupo PALO
Application No.	09/869,581
Filed	October 22, 2001
Group Art Unit	2878
Examiner	Otilia GABOR
Attorney Docket No.	P63544US1

**MESSAGE**

Attached are the claims pages from the Amendment filed May 14, 2004.

Thank you.

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Attorney Docket No. P63544US1  
Application No. 09/869,581

**Amendments to the claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of claims:**

Claims 1-22 (canceled)

23 (new). A method for characterizing fluorescent molecules or other particles in samples comprising the steps of

a) monitoring fluctuating intensity of fluorescence emitted by the molecules or other particles in at least one measurement volume of a non-uniform spatial brightness profile by measuring numbers of photon counts in primary time intervals by a single or more photon detectors,

b) determining at least one distribution function of numbers of photon counts,  $P(\mathbf{n})$ , from the measured numbers of photon counts,

c) determining physical quantities characteristic to said particles by fitting the experimentally determined distribution function of numbers of photon counts, wherein the fitting involves calculation of a theoretical distribution function of the number of photon counts  $P(\mathbf{n})$  through its generating function, defined as

$$G(\vec{\xi}) = \sum_{\mathbf{n}} \vec{\xi}^{\mathbf{n}} P(\mathbf{n})$$

wherein in step c) when calculating the theoretical distribution  $P(\mathbf{n})$ , the spatial brightness profile is modeled by the expression:

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$$\frac{dV}{dx} = A_0 x (1 + a_1 x + a_2 x^2)$$

where  $dV$  denotes a volume element,  $x$  denotes logarithm of the relative spatial brightness,  $A_0$  is a constant selecting the unit of volume, and  $a_1$  and  $a_2$  are empirically estimated parameters.

24 (new). A method for characterizing fluorescent molecules or other particles in samples comprising the steps of

a) monitoring fluctuating intensity of fluorescence emitted by the molecules or other particles in at least one measurement volume of a non-uniform spatial brightness profile by measuring numbers of photon counts in primary time intervals by a single or more photon detectors,

b) determining at least one distribution function of numbers of photon counts,  $P(n)$ , from the measured numbers of photon counts,

c) determining physical quantities characteristic to said particles by fitting the experimentally determined distribution function of numbers of photon counts,

wherein the fitting procedure involves calculation of a theoretical distribution function of the number of photon counts  $P(n)$  through its generating function, defined as

$$G(\xi) = \sum_n \xi^n P(n)$$

wherein in step c) when calculating the theoretical distribution  $P(n)$ , the spatial brightness profile is modeled by the expression

$$\frac{dV}{dx} = A_0 x^{a_3} (1 + a_1 x + a_2 x^2)$$

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where  $dV$  denotes a volume element,  $x$  denotes logarithm of the relative spatial brightness,  $A_0$  is a constant selecting the unit of volume, and  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$  are empirically estimated parameters.